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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,195	07/28/2000	HIROMI SAITO	106387	8637

25944 7590 04/18/2003

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EXAMINER
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AKKAPEDDI, PRASAD R

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/601,195

Applicant(s)

SAITO ET AL.

Examiner

Prasad R Akkapeddi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 December 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 26 December 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>13</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                 |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>9</u> . | 6) <input type="checkbox"/> Other:  |

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature 'a center position of the opening area formed in one of the substrates and the second substrate is **offset** toward the clear viewing direction with respect to a center position of the opening area formed in another substrate from which light is transmitted' as recited in claim 28, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the instant case the recited feature “of the first opening area and the second opening area, a center position of the opening area formed in one of the substrates and the second substrate is **offset** toward the clear viewing direction with respect to a center position of the opening area formed in another substrate from which light is transmitted” is indefinite due to the unclear language.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh et al (Oh) (U.S.Patent No. 5,844,644) in view of Kato et al. (Kato) (U.S.Patent No. 5,561,538).

a. As to claim 1: Oh discloses a liquid crystal device (fig. 3) with a first substrate (110) with plurality of pixels with pixel electrodes (117), a second substrate (120) and a liquid crystal (Not numbered) sandwiched between the two substrates. From Fig. 3, one can see that there is a clear viewing direction and an opposite of the clear viewing direction. The viewing directions are as defined by the applicant. However, Oh's device does not show that the liquid crystal having an alignment state that produces a clear viewing direction through the liquid crystal. Kato on the other hand, discloses a liquid crystal display apparatus with a first substrate and a second substrate (2, 3), with pixel electrodes (Fig. 1) (Col. 7, lines 46-65), a liquid crystal between substrates 2 and 3, light blocking areas (opposite of the clear view direction), the light -transmitting areas (clear view direction) where the incident light that entered the light transmitting areas (4b) are controlled by the orienting condition (alignment state) of the liquid crystal molecules (Col. 8, lines 53-60) and Kato also discloses that the light exiting each light transmitting area (clear view direction) of the liquid crystal panel is magnified (Col. 8, lines 60-61). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the configuration disclosed by Kato in order to produce a full-color display of high image quality without degrading image quality and without causing stripe patterns due to parallax.

As to claims 2-20: Oh discloses a black matrix (121) overlapping the pixel electrodes, a first opening and a second opening (Fig. 3), micro lenses (128) in substrate (120) that oppose each pixel region and substantially coincide with the center position of the opening area, the optical center position of the micro lens being offset toward the clear viewing direction (again, the clear viewing direction is as defined by the applicant), a second light shield (112) formed in a matrix, the micro lenses focusing light, a high refractive index layer (128), a low refractive index layer (125) ( since micro lenses are formed in a high refractive index material), a medium refractive index layer (123), a non-lens area (untransmissive portion) (Col 4, line 37-44), an additional layer (Col 4, lines 33-35) for the micro lenses, and the micro lenses being convex (Fig. 4). Oh also discloses that the LCD comprises a plurality of scanning (115) and plurality of data lines and in plane switching. Kato also discloses microlenses. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the specific configuration in order to produce a full-color display of high image quality without degrading image quality and without causing stripe patterns due to parallax.

6. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oh and Kato and further in view of Suzuki et al (Suzuki) (U.S.Patent No. 6,437,764).

b. Although Oh discloses a liquid crystal display device with all the features, Oh does not explicitly disclose the formation of a storage capacitor. The storage capacitor is very common for all the liquid crystal devices with switching

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elements. Suzuki, on the other hand in disclosing a similar liquid crystal device, discloses the use of storage capacitor (Cstg). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the storage capacitor disclosed by Suzuki to the device disclosed by Oh for storing image information at the pixel electrode.

7. Claims 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh and Kato and further in view of Hayashi et al (Hayashi) (U.S.Patent No. 6193376).

Although Oh discloses a liquid crystal device, Oh does not disclose the use of such a device in a projection display device. Using liquid crystal devices in projection displays is very common for displaying bright, uniform image with good resolution having smaller size and being economical. Hayashi, on the other hand discloses a liquid crystal projection device that use one or more of liquid crystal panels (65, 66, 67) and the at least one panel (66) (Fig. 22) being inclined with respect to the optic axis. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the liquid crystal device disclosed by Oh to the display device disclosed by Hayashi for displaying bright, uniform image with good resolution and to provide a low cost and compact device.

8. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (Kato) (U.S.Patent No. 5,561,538) in view of Ogawa (U.S.Patent No. 6,195,143).

c. As to claims 28: As discussed above Kato discloses the newly recited feature. However, Kato does not explicitly disclose the offsetting of the center positions of the opening areas formed in the first and the second substrates. Ogawa on the other hand, in disclosing a liquid crystal panel with micro-lens array, discloses such an offset toward the clear viewing direction between the center positions (Fig. 3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the specific configuration as disclosed by Ogawa to provide a liquid crystal device having improved contrast of displayed images.

d. As to claim 29: As discussed above Kato discloses the newly recited feature. However, Kato does not explicitly disclose the microlens refract part of the incident light from opposite of the clear viewing direction toward the unopened area. Ogawa in Fig. 3, clearly discloses this feature where the light rays from the area (852) are refracted by the microlens toward the unopened area (826P) (Col. 9, lines 1-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the specific configuration as disclosed by Ogawa to provide a liquid crystal device having improved contrast of displayed images (Col. 9, lines 58-60).

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1,28 and 29 have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

RA/

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April 16, 2003

T. Chowdhury  
T. Chowdhury  
Primary Examiner